UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,895	02/10/2004	Jun Fang	MSFT-2952/307004.01	3065

41505 7590 01/24/2007

WOODCOCK WASHBURN LLP (MICROSOFT CORPORATION)
CIRA CENTRE, 12TH FLOOR
2929 ARCH STREET
PHILADELPHIA, PA 19104-2891

EXAMINER	
ROSE, HELENE ROBERTA	
ART UNIT	**PAPER NUMBER**
2163	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/776,895	FANG ET AL.	
	Examiner	Art Unit	
	Helene Rose	2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/16/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,10-15,17,20-25,27 and 30* is/are pending in the application.

4a) Of the above claim(s) ~~*6,8,9,16,18,19,26,28 and 29*~~ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-5,10-15,17,20-25,27 and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. This is a RESPONSE TO NON-FINAL OFFICE ACTION entered on 10/16/2006. Claims 1,11,21-25,27, and 30 have been amended. Claims 6,8,9,16,18-19,26, and 28-29 have been cancelled. No claims were added. Therefore, claims 1-5,10-15,17,20-25,27, and 30 are pending.

2. Applicant's arguments, with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 U.S.C – 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5, 10-15, 17, 20-25, 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Legaria et al. (Non-Patent Literature, Orthogonal Optimization of Sub Queries and Aggregation , Year of Publication: 2001, hereinafter Legaria) in view of Faiman, Jr (US Patent No. 5,836,014, Date of Patent: November 10,1998, hereinafter Faiman) and further in view of Chengwen et al (Non-Patent Literature, A framework for Global Optimization of Aggregated Queries, Year of Publication: 1997, hereinafter Chengwen).

Claims 1, 11, 20 and 21:

Regarding Claims 1, 11, 20 and 21, Legaria teaches a method for algebrizing a syntax tree representation of a relational database query into a relational algebra representation, said syntax tree comprising a plurality of nodes, and said algebrizing comprising a plurality of operations each of which can be performed in a single pass through said syntax tree representation (see page 572, Figure 1, wherein a tree representation is illustrated and algebrized comprising a plurality of nodes, and on page 572, Figure 3, wherein a direct algebraic representation is illustrated, page 574, second column, lines 12-13, wherein F is expressed over

a single_column, and page 575, wherein it takes a relational input and passes input rows unmodified, Legaria), said method comprising the step of performing at least two operations in a single pass through said syntax tree representation (page 576, second column, wherein the first two condition ensure that all columns of the predicate are functionality determined by the grouping columns, and the second condition implies that no two rows from the relation S are included in the same group during aggregation, Legaria),

Legaria discloses the above limitations. However, Legaria does not disclose wherein "one of the operations being constant folding".

On the other hand, Faiman discloses wherein "**one of the operations being constant folding**" (see abstract, wherein constant folding optimization is performed by the generic compiler back end, and comprises finding occurrences of expressions that can be reduced to a constant and calculated at compile time rather than at runtime; and column 22, wherein 7-20, wherein "this operation is known as constant folding .....", Faiman)

It would have been obvious at the time of the invention was made for one person of the ordinary skill in the art to modify the disclosure of Legaria with Faiman for the purpose of establishing and implementing a method for improving the run-time performance of a system

Claims 2, 12 and 22:

Legaria in view of Faiman discloses the above limitations. However, Legaria in view of Faiman do not disclose wherein the system executes at least two operations in a predetermined order at each of said plurality of nodes during said single pass through said syntax tree representation.

On the other hand, Chengwen discloses wherein said system executes at least two operations in a predetermined order at each of said plurality of nodes during said single pass through said syntax tree representation (page 265, see Figure 1, wherein execution plans for query 1 and query 2, Chengwen).

It would have been obvious at the time of the invention was made for one person of the ordinary skill in the art to modify the disclosure of Legaria and include mathematical algebraic

algorithms for the purpose of optimization, management, manipulation, information storage and retrieval.

Claims 3, 13 and 23:

Regarding Claims 3, 13 and 23, the combination of Legaria in view of Faiman and further in view of Chengwen teaches wherein said at least two operations comprise a first operation and a second operation;

said subsystem executes said first operation before said second operation at each of said plurality of nodes, and receives a result from said first operation at each of said plurality of nodes (page 264, sections 3.1; wherein MAQO is defined, Chengwen); and

said subsystem either executes or does not execute said second operation at each of said plurality of nodes, on a node by node basis, based on a result from said first operation (see page 265, second column wherein the paragraph that begins with "the standard, i.e. original execute plans for query 1 and query 2 and so forth, Chengwen).

Claims 5, 7, 15, 17, 25 and 27:

Regarding Claims 5, 7, 15, 17, 25 and 27, the combination of Legaria in view of Faiman and further in view of Chengwen teaches wherein said at least two operations comprises **at least all operations** from among a group of operations, said group of operations comprising:

table and column binding (see page 263, wherein tables and columns binding is illustrated, Chengwen);

aggregate binding (see page 269, wherein aggregate queries, aggregate queries on various criteria, Chengwen);

type derivation (see page 572, wherein aggregate, then join is illustrated, Legaria);

property derivation (page 573, first column, wherein properties of aggregate functions is defined, Legaria); and

tree translation (REFER to claim 4, wherein this limitation has already been addressed, Legaria).

Claims 10 and 30:

Regarding Claims 10 and 30, the combination of Legaria in view of Faiman and further in view of Chengwen teaches a method for algebrizing a syntax tree representation of a relational database query into a relational algebra representation, said syntax tree comprising a plurality of nodes (REFER to claim 1, wherein this limitation is substantially the same as claim 1, Legaria) already been addressed, and said algebrizing comprising a plurality of operations, said method comprising the inclusion of constant folding as an operation among said plurality of operations (Refer to claims 1, wherein this limitation is substantially the same/or similar, Faiman).

Claims 4, 14 and 24:

Regarding Claims 4, 14 and 24, the combination of Legaria in view of Faiman and further in view of Chengwen teaches wherein said at least two operations comprises **at least one operation** from among a group of operations, said group of operations comprising:

table and column binding;

aggregate binding;

type derivation;

constant folding;

property derivation; and

tree translation (see page 579, wherein parse and bind is defined, and wherein the step is relatively direct translation of SQL text into an operator tree, Legaria).

Prior Art of Record

1. Chengwen et al (Non-Patent Literature – A framework for global optimization of aggregate queries).

2. Legaria et al (Non-Patent Literature – Orthogonal Optimization of SubQueries and aggregation).

3. Faiman, Jr. (US Patent No. 5,836,014)

Point of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Rose whose telephone number is (571) 272-0749. The examiner can normally be reached on 8:00am - 4:30pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Helene Rose
Technology Center 2100
December 30, 2006

WILSON LEE
PRIMARY EXAMINER